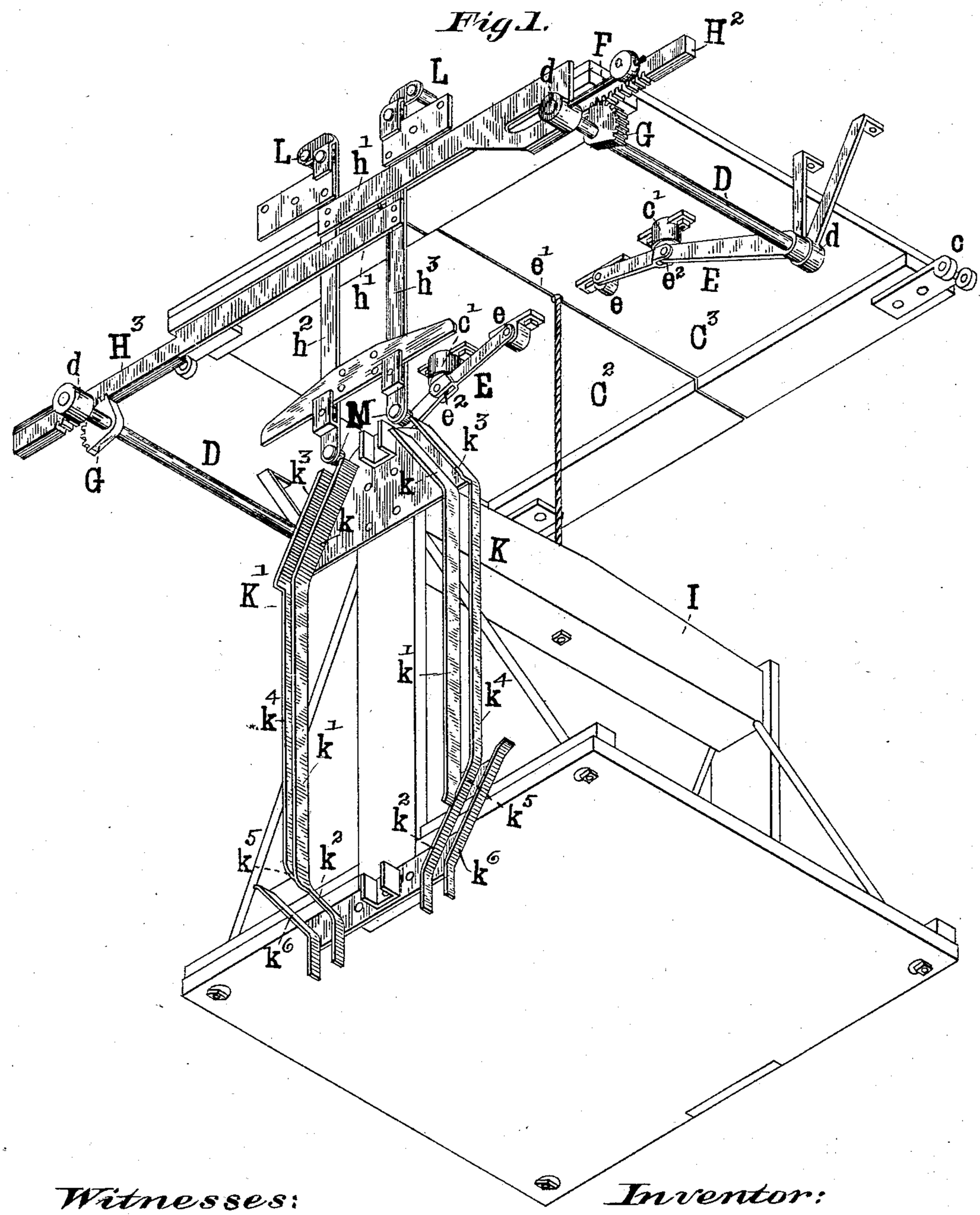
(No Model.) 3 Sheets—Sheet 1.

F. K. FASSETT.

MEANS FOR OPERATING ELEVATOR HATCHWAYS.

No. 374,243. Patented Dec. 6, 1887.

Fig 1.



Witnesses:
N. B. Anderson,
Edward W. Turrell

Inventor:
Francis K. Fassett
by C. D. Moody
Atty

(No Model.) 3 Sheets—Sheet 2.

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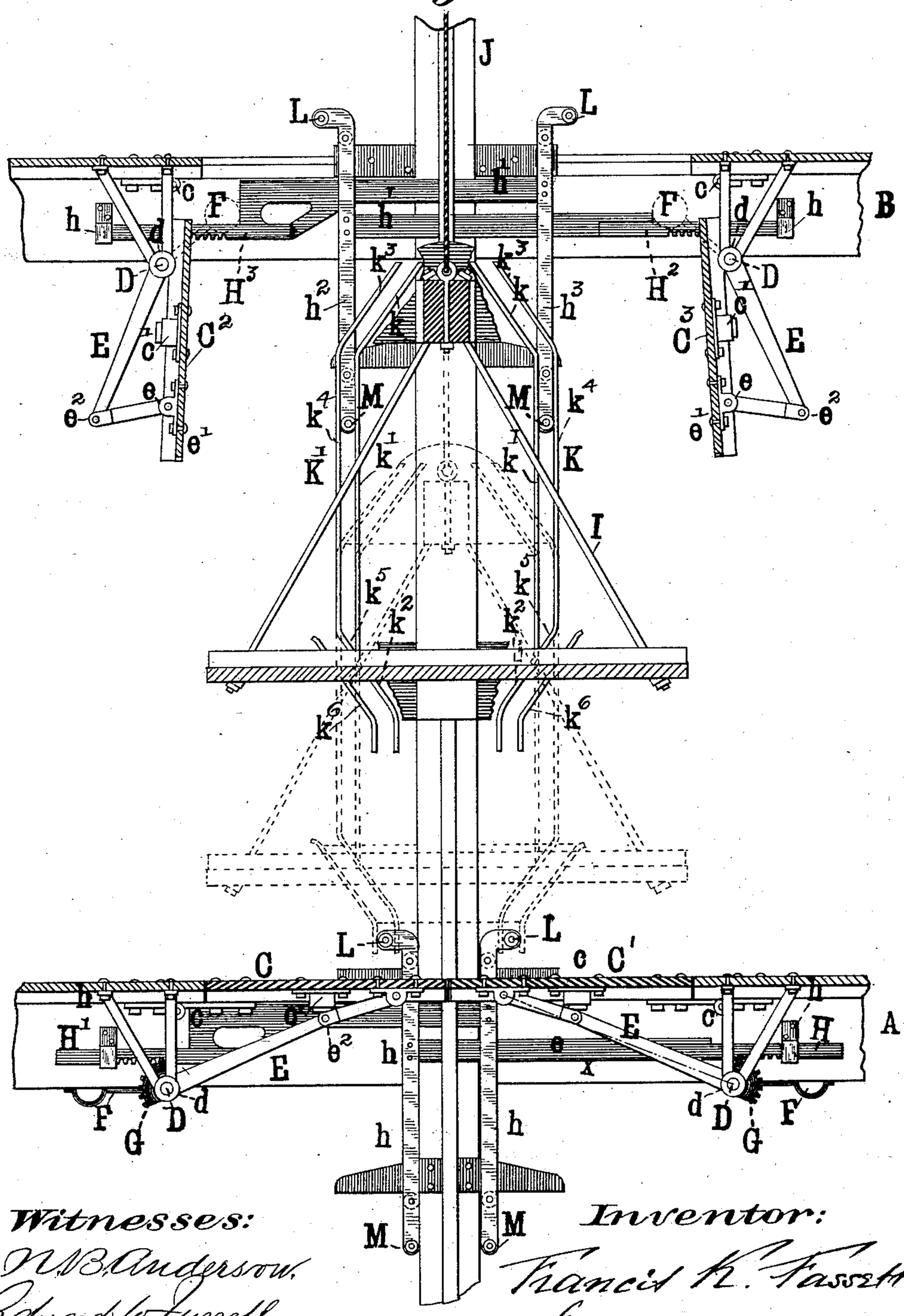
Fig. 2.



Witnesses:

N. B. Anderson.

Edward C. Turrell

Inventor:

Francis K. Fassett

by C. D. Woody atty

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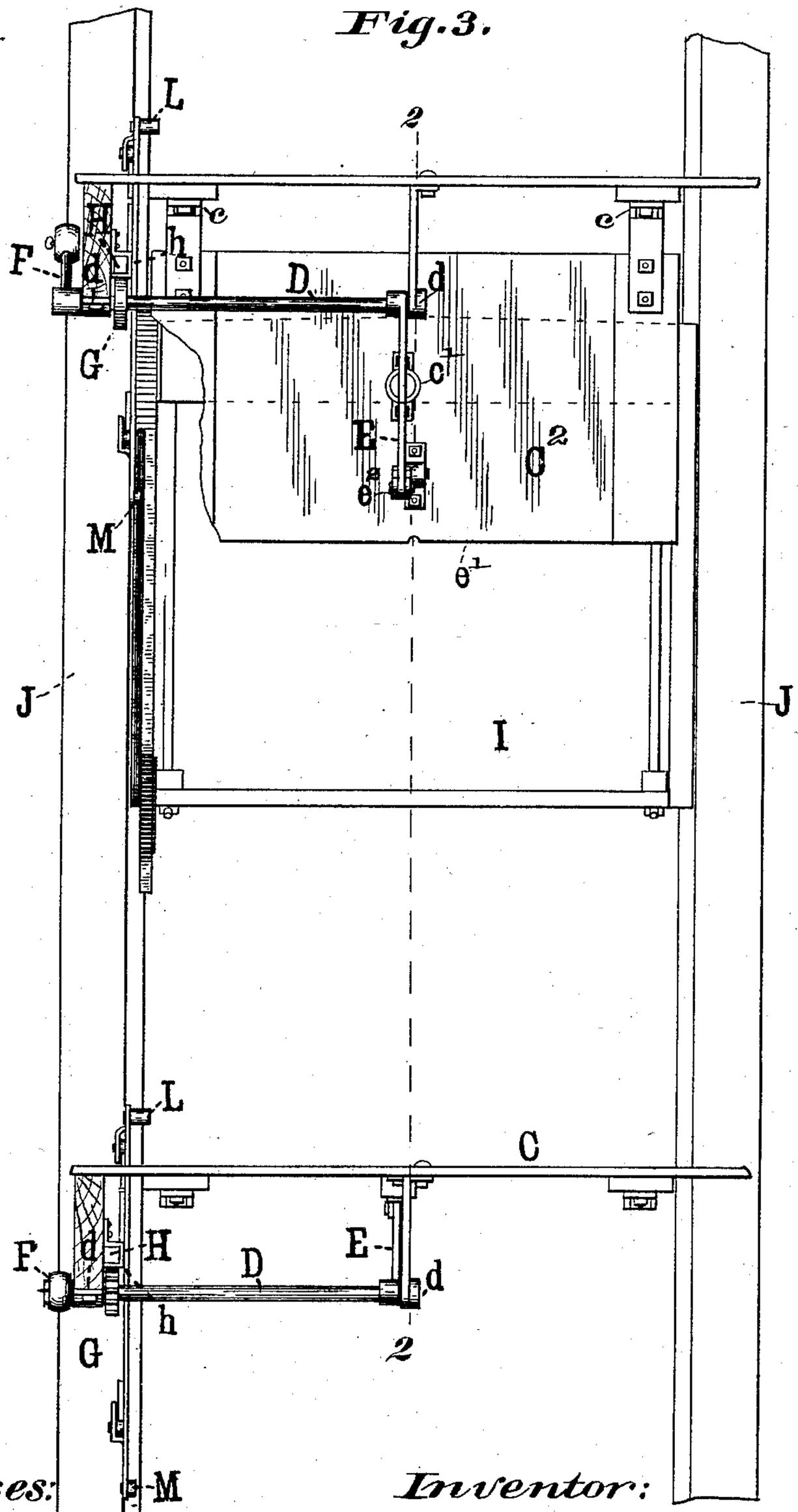
Fig. 3.



Witnesses:

W B Anderson

Edward b Turrell

Inventor:

Francis K. Fassett

by E Dumoody atty

UNITED STATES PATENT OFFICE.

FRANCIS K. FASSETT, OF ST. LOUIS, MISSOURI.

MEANS FOR OPERATING ELEVATOR-HATCHWAYS.

SPECIFICATION forming part of Letters Patent No. 374,243, dated December 6, 1887.

Application filed June 6, 1887. Serial No. 240,385. (No model.)

To all whom it may concern:

Be it known that I, FRANCIS K. FASSETT, of St. Louis, Missouri, have made a new and useful Improvement in Means for Operating Elevator-Hatchways, of which the following is a full, clear, and exact description.

The improvement relates to the hatch-doors, to the balancing, and to the mode of locking and of opening and closing them, all substantially as is hereinafter described and claimed, and as illustrated in the annexed drawings, making part of this specification.

Figure 1 is a view in perspective, from beneath, of the improved mechanism. Fig. 2 is a vertical cross-section on the line 2 2 of Fig. 3; and Fig. 3 is a side elevation, the hatch-doors being opened and the elevator cage or car being about to pass them.

The same letters of reference denote the same parts.

In Fig. 2, A represents a lower floor, and B an upper floor, of a building to which the improvement is applied.

C C′ represent the hatch-doors in the lower floor, and C^2 C^3 the hatch-doors in the upper floor. The doors are hinged at *c* to enable them to swing downward in opening and upward in closing, substantially as shown. They are balanced and also locked in an open and in a closed position in the following manner:

D represents a shaft journaled in bearings *d* on the under side of the door. An arm, E, leads from the door to the shaft. The arm is pivoted at *e* to the door, near the edge *e′*, and at its opposite end the arm is fastened rigidly to the shaft D, and between its points of connection with the door and shaft, respectively, the arm is jointed at e^2 to enable the arm at its joint to be turned upward or downward, as indicated in the different positions of the arm in Fig. 2. The shaft D is also provided with a weighted arm, F. Unless the shaft is rotated, the door cannot be opened, for the arm E acts as a brace and prevents the opening, and, owing to the joint e^2 and to the joint seen in the lower part of Fig. 2 being, when the door is closed, slightly above a line drawn through the two ends of the arm, and to the then position of the weighted arm F, the door is not only braced but locked, and as long as the weighted arm remains at a level above the lowest position into which it can turn it tends to hold the door-arm E in a locked position. A projection, *c′*, upon the door prevents the arm-joint e^2 from rising too high. The only way, then, to open the door is to depress the joint e^2 below a line drawn through the two ends of the arm E. Such line is indicated by the broken line *x*, Fig. 2. This (the depressing of the joint) is accomplished by rotating the shaft D, and after the joint has been thus depressed the weighted arm acts to balance the door in almost all of the positions into which it may be opened; but if the door is opened wide, so as to bring the weighted arm past a perpendicular, as indicated by its position in the upper part of Fig. 2, it (the door) becomes locked in its open position.

The automatic opening and closing of the hatch-doors is effected in the following manner:

G represents a toothed segment attached to each of the shafts D. It engages and operates in conjunction with a rack-bar, H—that is, the lower right-hand segment G, Fig. 2, engages with the rack-bar H, the lower left-hand segment G engages with the rack-bar H′, the upper right-hand segment G engages with the rack-bar H^2, and the upper left-hand segment G with the rack-bar H^3. The rack-bars work horizontally in suitable guides, *h*, Fig. 2, and their inner ends, *h′*, cross each other at the center of the elevator, and are respectively provided with an upright bar, h^2 h^3.

The elevator cage or car I is of the usual construction, saving as it is modified by the present improvement, and it is adapted to be worked upward and downward in the ordinary manner between the guides J J. It is provided with the peculiar system of deflectors shown at K K′, there being a system, K, which coacts with the rack-bars H and H^2, and a similar system, K′, which coacts with the rack-bars H′ and H^3. A strip, *k*, at the upper end of the car inclines outward and downward from the center of the side of the car, as shown, and it is then extended vertically downward at *k′*, and then at k^2 it inclines inward and downward toward the center of the side of the car, as shown; but the lowest portion, k^2, is, as seen in Fig. 1, narrower than the upper portions, *k k′*. There is another strip, k^3, extended parallel and of the same width with the portion *k*. From the lower end of the strip k^3 a strip, k^4, extends vertically downward parallel with the strip *k′*, and at k^5 it connects with the strip k^2. The strips k^4 k^5 k^2 are

of the same width. Another strip, k^6, of the width of and extended parallel with the strip k^2, completes the system K. A similar set of strips, but reversed, saving the vertical portions, composes the system K'. At the upper end of each of the uprights h^2 h^3 is a roller, L, and at the lower end of each of the uprights is a roller, M. This lower roller does not project as far into the plane of the deflector as does the roller L. As the car is elevated, the strips k k, respectively, encounter the rollers M M, in consequence of which the rack-bars are drawn toward each other, and the segments and shafts thereby rotated and the hatch-doors opened. By this time the rollers M M have encountered the vertical strips k' k', by reason of which the doors are held open until the rollers M M have passed the strips k' k'. The rollers L L now come against the outer side of the vertical strips k^4 k^4, and the doors in consequence are held open until the platform of the car shall have passed upward above the floor. The rollers M M now come against the inner side of the strips k^6 k^6, and the rack-bars in consequence are moved backward into their original position, and the doors are closed. In descending the car-deflectors operate to reverse the movements of the rollers M L, and the hatch-doors are opened and closed, as before.

I claim—

1. The combination of the hinged doors, the jointed braces, the shafts, the weighted arms, the rack-bar, and segment for rotating the shafts, substantially as described.

2. The combination of the hinged doors, the jointed braces, the shafts journaled on the under side of their respective doors, the segments on the ends of the shafts, and the rack-bars, substantially as described.

3. The combination of the hinged doors, the jointed braces, the shafts, the segments, the rack-bars, the car, and the deflectors, substantially as described.

4. The combination of the car having the deflectors, constructed as described, with the rack-bars and vertical bars having the rollers, substantially as described.

Witness my hand.

FRANCIS K. FASSETT.

Witnesses:

C. D. MOODY,

A. M. EVERIST.